

REMARKS

Favorable reconsideration of this application is respectfully requested in view of the following remarks.

The original Abstract of the Disclosure has been replaced with a new Abstract of the Disclosure that avoids the use of the term "means." Accordingly, withdrawal of the objection to the Abstract of the Disclosure is respectfully requested.

Independent Claim 1 has been amended to address the issues raised at the bottom half of page two of the official Action. In addition, much of the wording in original Claim 1 has been changed to define the subject matter originally set forth in original Claim 1, but in a manner less awkward than the original claim wording. Thus, Claim 1 now recites that the target parking position setting means sets the target parking position based on an image displaying surroundings of a vehicle, and recites that the traveling locus calculating means calculates the traveling locus from the present vehicle position to the target vehicle position set by the target parking position setting means. In addition, the original claim wording defining the memory means has been reworded to now define that the memory means maintains storage of the traveling locus generated before a change of the parking position is performed by the target parking position setting means until a new traveling locus is generated in response to the change of the target parking position after a parking assist control is started based on the traveling locus initially generated by the traveling locus calculating means before the change of the target parking position, and to also recite that the parking assist means assists the parking of the vehicle based on the traveling locus, with the parking assist means assisting the parking of the vehicle

based on the new traveling locus when the traveling locus is generated by the traveling locus calculating means.

In light of the rewording incorporated into independent Claim 1, withdrawal of the claim rejection based on the second paragraph of 35 U.S.C. § 112 is respectfully requested.

The only other issue raised in the Official Action involves the rejection of all of the original claims based on the discussion in the background portion of the present application considered together with the disclosure in U.S. Patent No. 6,170,591 to *Sakai et al.*

The discussion in the background portion of the present application points out that known parking assist apparatus are constructed to calculate a traveling locus to a target parking position set by a driver. When the target parking position is changed, a new traveling locus to the changed target parking position is set and the vehicle is guided along the new traveling locus.

The Official Action recognizes that the parking assist apparatus discussed in the background portion of the present application does not include memory means similar to that recited in original independent Claim 1. The Official Action thus relies upon the disclosure contained in *Sakai et al.* This document discloses a vehicle automatic steering apparatus that is specifically designed to determine whether an automatic parking control operation can be performed in the presence of an obstacle in the vehicle's path of movement. When the apparatus determines the existences of an obstacle, the automatic parking control operation is interrupted, and the apparatus judges whether it is possible to continue the automatic parking control operation based on the condition of the obstacle. When the apparatus determines

that continuation of the automatic parking control operation is not possible, the steering angle of the vehicle is reproduced in the reverse direction so that the vehicle is returned to the starting position. The position of the vehicle is then corrected and the parking operation (either through the driver's steering operation or automatic parking operation) is once again started.

Looking at the apparatus disclosed in *Sakai et al.* in more detail, the disclosed apparatus includes a storage unit 23 that stores data pertaining to four parking modes (i.e., a back parking/right mode, a back parking/left mode, a longitudinal parking/right mode and a longitudinal parking/left mode) in the form of a table. This data is based on the relationship of the standard steering angle relative to the distance of movement of the vehicle. To initiate the automatic parking control operations, the vehicle V is, for example, moved to a position in the vicinity of a garage and is stopped in a starting position such as position 1 in Fig. 2A. An automatic parking switch S₆ is turned on and the automatic parking operation is started.

The apparatus also includes a judging unit 24 that superposes the condition of an obstacle detected by a detector S₄ on the estimated locus of vehicle movement stored in the storage unit 23. When it is determined that the obstacle will interfere with the estimated locus of vehicle movement, the judging unit 24 determines that it is not possible to continue the automatic parking control operation. In the event the judging unit 24 determines that an obstacle will interfere with the locus of vehicle movement, the driver is notified by way of a display unit 11. If the driver turns on an obstacle avoiding switch S₇, the standard steering angle outputted in the order 1, 2, 4 as shown in Fig. 3A is reversely reproduced and is outputted in the order 4, 2, 1 as

generally illustrated in Fig. 3B. The vehicle is thus moved back to the starting position along the original locus.

One of the differences between the parking assist apparatus at issue here and the disclosure in *Sakai et al.* is that the parking assist means used in the parking assist apparatus of the present invention assists the parking of the vehicle based on the traveling locus stored in the memory and generated before the change of the target parking position when the traveling locus is not generated by the traveling locus calculating means following the change of the target position by the target parking position setting means. That is, the memory means stores the traveling locus generated before the target parking position is changed until a new traveling locus is generated in response to the change of the target parking position. If the target parking position is changed, but a new traveling locus is not generated following such change in the target parking position, the parking assist means assists the parking of the vehicle based on the traveling locus stored in the memory means and generated before the target parking position was changed. Advantages associated with this arrangement are discussed in the present application.

To more clearly set forth this difference, Claim 1 has been amended to recite that the parking assist means assists the parking of the vehicle based on the traveling locus stored in the memory means and generated before the change of the target parking position when the new traveling locus is not generated by the traveling locus calculating means following the change of the target parking position by the target parking position setting means.

As pointed out above in connection with the disclosure in *Sakai et al.*, *Sakai et al.* is specifically concerned with identifying the existence of obstacles which make it

impossible to continue an automatic parking control operation. When such an obstacle is detected and the driver operates the obstacle avoiding switch S₇, the standard steering angle is reversely reproduced to move the vehicle back to the starting position along the original locus. Thus, *Sakai et al.* is not at all concerned with constructing a parking assist apparatus to address situations in which a target parking position is changed by a target parking position setting means, but the new traveling locus is not generated by a traveling locus calculating means. There is thus no disclosure in *Sakai et al.* of configuring a parking assist means to assist the parking of the vehicle based on a traveling locus stored in a memory and generated before changing a target parking position when a new traveling locus is not generated following the change of the target parking position. Consequently, even assuming one of ordinary skill in the art would have been motivated to modify the parking assist apparatus discussed in the background portion of the present application based on the disclosure contained in *Sakai et al.*, the resulting modified parking assist apparatus would not be the same as that recited in independent Claim 1.

The dependent claims are allowable at least by virtue of their dependence upon allowable independent Claim 1. The dependent claims are further allowable as they recite additional distinguishing characteristics associated with the claimed apparatus. For example, Claims 5 and 6 recite that the memory means maintains storage of the traveling locus generated at a time immediately before the change of the target parking position when the difference between the target parking position changed by the target parking position setting means and the target parking position set at a time immediately before the target parking position is changed is equal to or

smaller than a predetermined value. Claims 7 and 8 recite that when the difference between the newly set target parking position and the target parking position set at a time immediately before the resetting is equal to or smaller than the predetermined value after the resetting of the target parking position by the target parking position setting means, the traveling locus to the newly set target parking position stops being calculated by the traveling locus calculating means and the parking assist is continued based on the traveling locus generated at a time immediately before the resetting. Addressing these claims, the Official Action notes the discussion in lines 6-18 and lines 26-30 of *Sakai et al.* Here, *Sakai et al.* describes that when the judging means determines that it is impossible to continue execution of the automatic steering control operation, the judging means determines whether a change of the starting position will enable the automatic steering control operation to be resumed, or whether a change in the movement locus of the vehicle will permit the automatic steering control operation to be resumed. This determination is based on the content stored in the storage means. When it is determined that it is possible to resume the automatic steering control operation, such operation is resumed to complete the parking of the vehicle. On the other hand, when it is not possible to resume the automatic steering control operation, the resumption of such operation does not occur.

Thus, *Sakai et al.* merely envisions resuming a parking control operation that has been stopped due to the existence of an obstacle. *Sakai et al.* does not, however, disclose that a traveling locus generated at a time immediately before the change of a target parking position is maintained in storage when the difference between the target parking position changed by a target parking position setting

means and the target parking position set at a time immediately before the target parking position is changed is equal to or smaller than a predetermined value as recited in Claims 5 and 6. Further, *Sakai et al.* does not disclose that when the difference between a newly set target parking position and a target parking position set at a time immediately before the resetting is equal to or smaller than a predetermined value after the resetting of the target parking position, the traveling locus to the newly set target parking position stops being calculated and the parking assist is continued based on the traveling locus generated at a time immediately before the resetting as set forth in Claims 7 and 8.

As a final point, the wording in dependent Claims 2, 5, 6, 7 and 8 has been changed for purposes of consistency with the wording set forth in independent Claim 1. Also, Claims 3 and 4 have been canceled.

Early and favorable action with respect to this application is respectfully requested.

Should any questions arise in connection with this application or should the Examiner believe that a telephone conference with the undersigned would be helpful in resolving any remaining issues pertaining to this application the undersigned respectfully requests that he be contacted at the number indicated below.

Respectfully submitted,

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